

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:

Pearson et al.

Serial No.: 10/772,121
Filed: February 4, 2004
For: POLYMER BLENDS

Group Art Unit: 1796

Examiner: P. Szekely

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Response to Notification of Non-Compliant Appeal Brief

This is in response to the Notification of Non-Compliant Appeal Brief dated 04/17/2009 and is timely filed on or before May 17, 2009. Transmitted herewith is revised Summary section and a revised Argument section of the Appeal Brief. The revised Summary indicates claim elements by page and paragraph number. The revised Argument section includes the specific text of unexpected results that was mentioned in the reference to Applicants Second Reply and Amendment.

Revised Summary Section starts on page 2.

Revised Argument Section stars on page 20.

Respectfully submitted,

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May 14, 2009

Date

SUMMARY OF CLAIMED SUBJECT MATTER

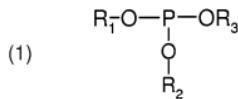
There are four independent claims 1, 5, 14 and 28 involved in the appeal.

Independent Claim 1

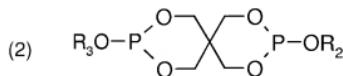
Independent claim 1 relates to a polymer blend comprising a mixture [page 3, Paragraph [0005]] of:

- (A) at least one polyester prepared by the reaction of at least one diol with at least one dicarboxylic acid or dialkyl ester thereof in the presence of a metallic catalyst [Claim 1 as originally filed];
 - (B) at least one phosphorus-containing compound [page 3, Paragraph [0006]];
 - (C) at least one hindered amine light stabilizer [page 3, Paragraph [0005]]; and
 - (D) at least one polycarbonate. [page 3, Paragraph [0005]].

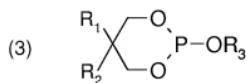
The phosphorus-containing compound (B) is selected from the formulas (1) - (6) [pages 3 and 4, Paragraph [0005]]:



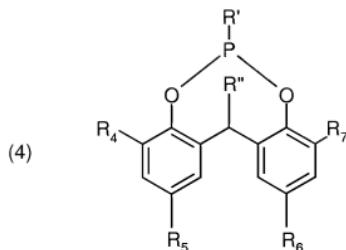
[page 3, Paragraph [0006]]



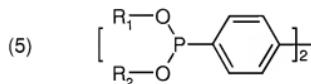
[page 4, Paragraph [0006]]



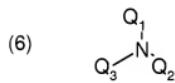
[page 4, Paragraph [0006]]



[page 4, Paragraph [0006]]



[page 4, Paragraph [0006]]



[page 4, Paragraph [0006]]

wherein

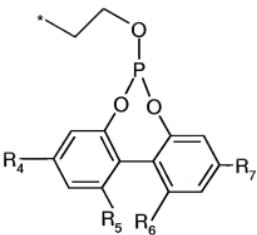
R₁, R₂ and R₃ are independently selected from the group consisting of C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, and heteroaryl [page 4, Paragraph [0006]]; [page 4, Paragraph [0006]]

R' is selected from the group consisting of halogen and OR₁ [page 4, Paragraph [0006]]; [page 4, Paragraph [0006]]

R'', R₄, R₅ R₆, and R₇ are independently selected from the group consisting of hydrogen, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, heteroaryl, and aryl [page 4, Paragraph [0006]]; and [page 4, Paragraph [0006]]

each Q₁, Q₂ and Q₃ group independently is radical A, wherein radical A has the following structure [page 5, Paragraph [0006]]:

Radical A =



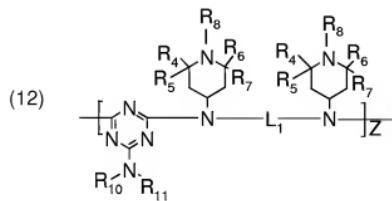
[page 5, Paragraph [0006]].

Independent Claim 5

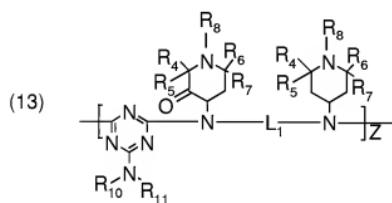
Independent claim 5 relates to a polymer blend [page 3, Paragraph [0005]], page 39, claim 5 [preamble] comprising:

- (A) at least one polyester comprising [page 3, Paragraph [0005] and page 39, claim 5]:
 - (1) diacid residues comprising at least 50 mole percent of residue of a diacid selected from the group consisting of 1,4-cyclohexanedicarboxylic acid, terephthalic acid and isophthalic acid or a mixture thereof [page 14, Paragraph [0015]]; and
 - (2) diol residues comprising at least 50 mole percent of ethylene glycol residues, cyclohexanedimethanol residues, or a mixture thereof [page 14, Paragraph [0015]]; based on a total of 100 mole percent of diacid residues and a total of 100 mole percent of diol residues [page 14, Paragraph [0015]]; (B) 0.01 to 0.5 weight percent of at least one phosphorus-containing compound based on the total weight of the blend [page 10, Paragraph [0007] and page 48, claim 14(b) as filed]; (C) 0.01 to 1.0 weight percent of at least one hindered amine light stabilizer based on the total weight of the blend [page 10, Paragraph [0007] and page 48, claim 14(c) as filed]; and
 - (D) at least one polycarbonate. [page 3, Paragraphs [0005]].

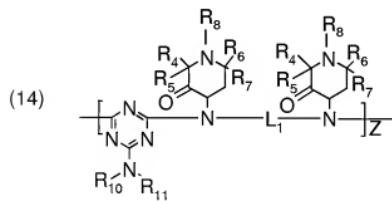
The hindered amine light stabilizer (C) is selected from the following formulas (12) - (19) [page 5, paragraph [0006]]:



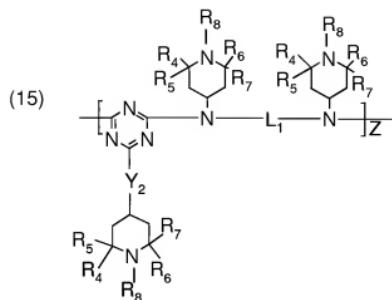
[page 6, paragraph [0006]]



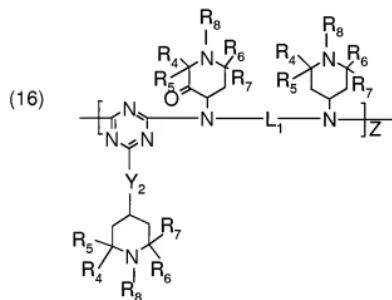
[page 6, paragraph [0006]]



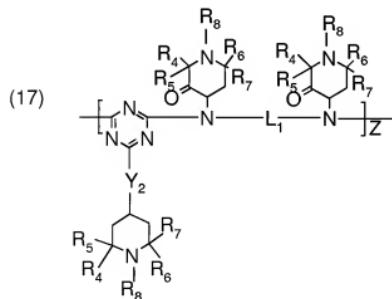
[page 7, paragraph [0006]]



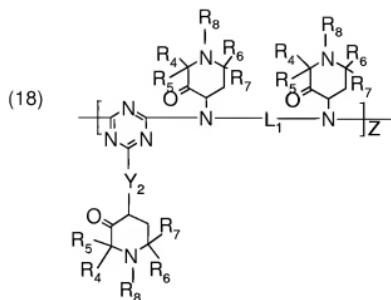
[page 7, paragraph [0006]]



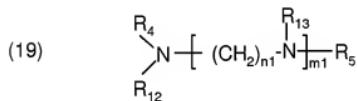
[page 7, paragraph [0006]]



[page 8, paragraph [0006]]



[page 8, paragraph [0006]]



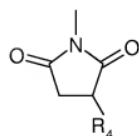
[page 8, paragraph [0006]]

wherein

R₄, R₅ R₆, and R₇ are independently selected from the group consisting of hydrogen, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, heteroaryl, and aryl [page 4, Paragraph [0006]];

R₈ is selected from the group consisting of hydrogen, -OR₆, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, and substituted C₃-C₈-cycloalkyl [page 9, Paragraph [0006]];

R₉ is selected from the group consisting of hydrogen, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, heteroaryl, aryl, -Y₁-R₄, and a succinimido group having the formula [page 9, Paragraph [0006]]:



[page 9, Paragraph [0006]]

R_{10} and R_{11} are independently selected from the group consisting of hydrogen, C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, C_3 - C_8 -cycloalkyl, and substituted C_3 - C_8 -cycloalkyl; R_{10} and R_{11} collectively may represent a divalent group forming a ring with the nitrogen atom to which they are attached [page 9, Paragraph [0006]];

L_1 is a divalent linking group selected from the group consisting of C_2 - C_{22} -alkylene, $-(CH_2CH_2Y_1)_{1-3}-$ CH_2CH_2- , C_3 - C_8 -cycloalkylene, arylene, and $-CO-L_2-OC-$ [page 9, Paragraph [0006]];;

L_2 is selected from the group consisting of C_1 - C_{22} -alkylene, arylene, $-(CH_2CH_2Y_1)_{1-3}-CH_2CH_2-$, and C_3 - C_8 -cycloalkylene [page 9, Paragraph [0006]];;

Y_1 is selected from the group consisting of $-OC(O)-$, $-NHC(O)-$, $-O-$, $-S-$, and

$-N(R_4)-$ [page 9, Paragraph [0006]];;

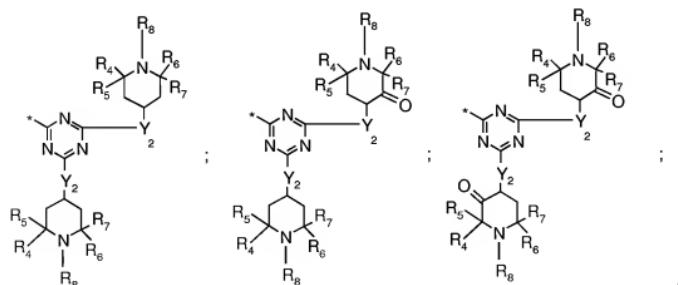
Y_2 is selected from the group consisting of $-O-$ and $-N(R_4)-$ [page 9, Paragraph [0006]];;

Z is a positive integer of up to about 20 [page 9, Paragraph [0006]];;

m_1 is selected from 0 to about 10 [page 9, Paragraph [0006]];;

n_1 is a positive integer selected from 2 to about 12 [page 9, Paragraph [0006]];;

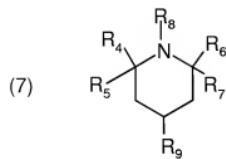
R_{12} and R_{13} are independently selected from the group consisting of hydrogen, C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, heteroaryl, aryl, and radical B wherein radical B is selected from the following structures [page 10, Paragraph [0006]];;



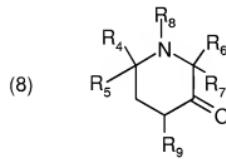
[page 10,

Paragraph [0006]]

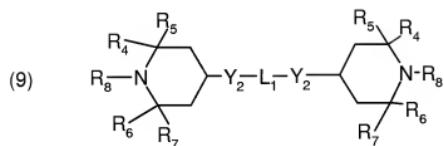
wherein * designates the position of attachment and wherein at least one of R_{12} and R_{13} is radical B. [page 10, Paragraph [0006]]



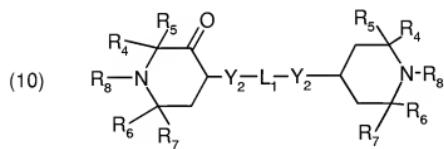
[page 5, paragraph [0006]]



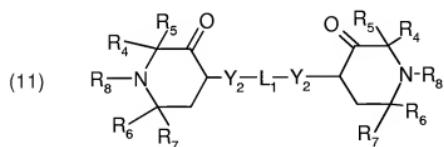
[page 5, paragraph [0006]]



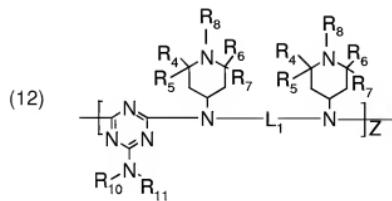
[page 5, paragraph [0006]]



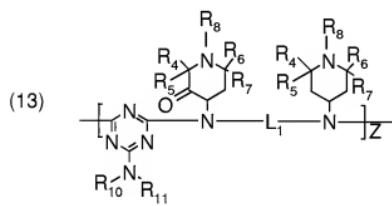
[page 6, paragraph [0006]]



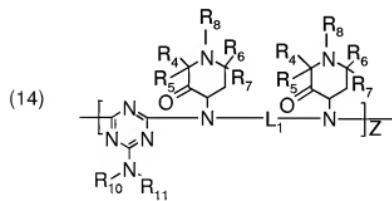
[page 6, paragraph [0006]]



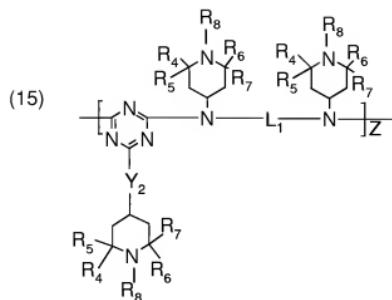
[page 6, paragraph [0006]]



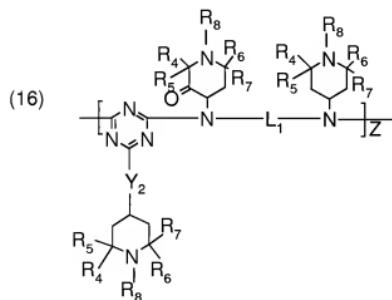
[page 6, paragraph [0006]]



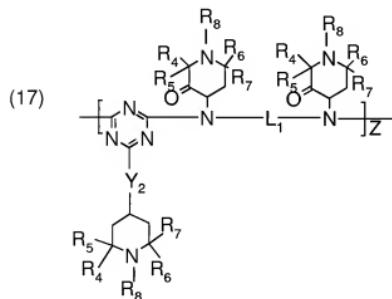
[page 7, paragraph [0006]]



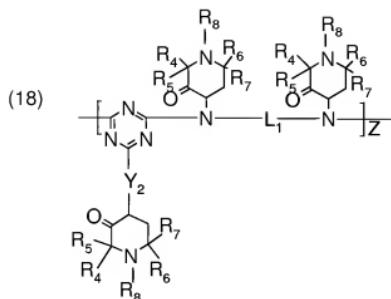
[page 7, paragraph [0006]]



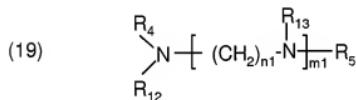
[page 7, paragraph [0006]]



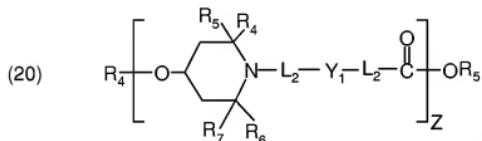
[page 8, paragraph [0006]]



[page 8, paragraph [0006]]



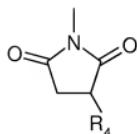
[page 8, paragraph [0006]]



[page 8, paragraph [0006]]

wherein

R₄, R₅ R₆, and R₇ are independently selected from the group consisting of hydrogen, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, heteroaryl, and aryl [page 4, Paragraph [0006]]; R₈ is selected from the group consisting of hydrogen, -OR₆, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, and substituted C₃-C₈-cycloalkyl [page 9, Paragraph [0006]]; R₉ is selected from the group consisting of hydrogen, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, heteroaryl, aryl, -Y₁-R₄, and a succinimido group having the formula [page 9, Paragraph [0006]]:



[page 9, Paragraph [0006]]

R₁₀ and R₁₁ are independently selected from the group consisting of hydrogen, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, and substituted C₃-C₈-cycloalkyl; R₁₀ and R₁₁ collectively may represent a divalent group forming a ring with the nitrogen atom to which they are attached [page 9, Paragraph [0006]];

L₁ is a divalent linking group selected from the group consisting of C₂-C₂₂-alkylene, -(CH₂CH₂-Y₁)₁₋₃-CH₂CH₂-, C₃-C₈-cycloalkylene, arylene, and -CO-L₂-OC- [page 9, Paragraph [0006]];;

L₂ is selected from the group consisting of C₁-C₂₂-alkylene, arylene, -(CH₂CH₂-Y₁)₁₋₃-CH₂CH₂-, and C₃-C₈-cycloalkylene [page 9, Paragraph [0006]];;

Y₁ is selected from the group consisting of -OC(O)-, -NHC(O)-, -O-, -S-, and

-N(R₄)- [page 9, Paragraph [0006]];;

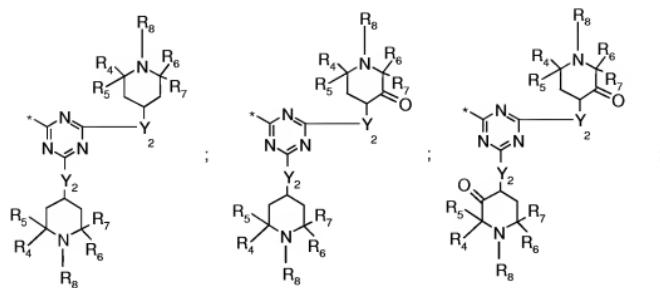
Y₂ is selected from the group consisting of -O- and -N(R₄)- [page 9, Paragraph [0006]];;

Z is a positive integer of up to about 20 [page 9, Paragraph [0006]];;

m₁ is selected from 0 to about 10 [page 9, Paragraph [0006]];;

n₁ is a positive integer selected from 2 to about 12 [page 9, Paragraph [0006]];;

R₁₂ and R₁₃ are independently selected from the group consisting of hydrogen, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, heteroaryl, aryl, and radical B wherein radical B is selected from the following structures [page 10, Paragraph [0006]];;

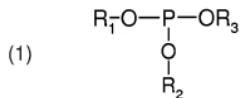


[page 10,

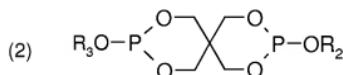
Paragraph [0006]

wherein * designates the position of attachment and wherein at least one of R_{12} and R_{13} is a radical B. [page 10, Paragraph [0006]]

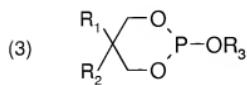
The phosphorus-containing compound (B) is selected from the formulas (1) - (6) [pages 3 and 4, Paragraph [0005]]:



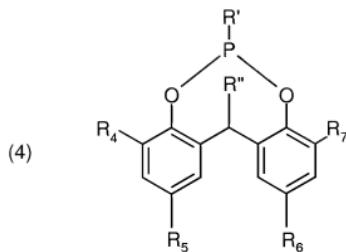
[page 3, Paragraph [0006]]



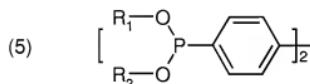
[page 4, Paragraph [0006]]



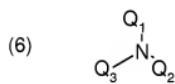
[page 4, Paragraph [0006]]



[page 4, Paragraph [0006]]



[page 4, Paragraph [0006]]



[page 4, Paragraph [0006]]

wherein

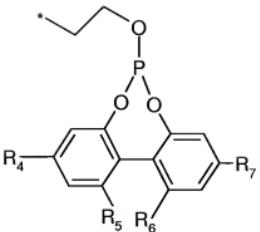
R₁, R₂ and R₃ are independently selected from the group consisting of C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, and heteroaryl [page 4, Paragraph [0006]]; [page 4, Paragraph [0006]]

R' is selected from the group consisting of halogen and OR₁ [page 4, Paragraph [0006]]; [page 4, Paragraph [0006]]

R'', R₄, R₅ R₆, and R₇ are independently selected from the group consisting of hydrogen, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, heteroaryl, and aryl [page 4, Paragraph [0006]]; and [page 4, Paragraph [0006]]

each Q₁, Q₂ and Q₃ group independently is radical A, wherein radical A has the following structure [page 5, Paragraph [0006]]:

Radical A =



[page 5, Paragraph [0006]].

Independent Claim 14

Independent claim 14 relates to a polymer blend comprising a mixture of [page 3, Paragraph [0005]] the following:

(A) at least one polyester having an inherent viscosity of about 0.4 to 1.2 dL/g measured at 25°C in a 60/40 ratio by weight of phenol/tetrachloroethane [page 14, Paragraph [0015]] and comprising:

(1) diacid residues comprising at least about 50 mole percent of residue of a diacid selected from the group consisting of 1,4-cyclohexanedicarboxylic acid, terephthalic acid and isophthalic acid or a mixture thereof [page 14, Paragraph [0015]]; and

(2) diol residues comprising at least about 50 mole percent of ethylene glycol residues, cyclohexanedi methanol residues, or a mixture thereof [page 14, Paragraph [0015]]; and

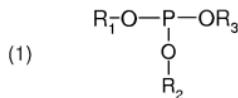
(B) about 0.1 to 0.5 weight percent of at least one phosphorus-containing compound based on the total weight of the composition [page 10, Paragraph [0007] and page 48, claim 14(b) as filed];

(C) about 0.1 to 1.0 weight percent of at least one hindered amine light stabilizer based on the total weight of the composition [page 10, Paragraph [0007] and page 48, claim 14(c) as filed]; and

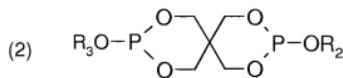
(D) at least one polycarbonate. [page 3, Paragraphs [0005]].

The hindered amine light stabilizer (C) is selected from the formulas (12) - (19) as in claim 5.

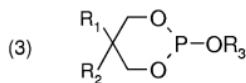
The phosphorus-containing compound (B) is selected from the formulas (1) - (6) [pages 3 and 4, Paragraph [0005]]:



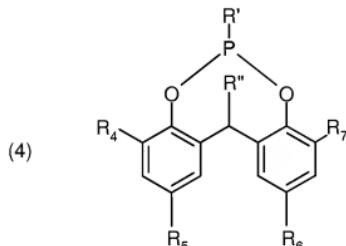
[page 3, Paragraph [0006]]



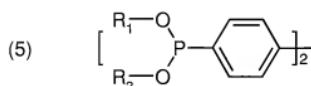
[page 4, Paragraph [0006]]



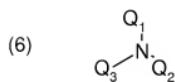
[page 4, Paragraph [0006]]



[page 4, Paragraph [0006]]



[page 4, Paragraph [0006]]



[page 4, Paragraph [0006]]

wherein

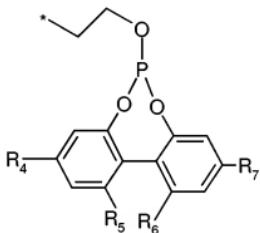
R₁, R₂ and R₃ are independently selected from the group consisting of C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, and heteroaryl [page 4, Paragraph [0006]];

R' is selected from the group consisting of halogen and OR₁ [page 4, Paragraph [0006]]; and

R'', R₄, R₅ R₆, and R₇ are independently selected from the group consisting of hydrogen, C₁-C₂₂-alkyl, substituted C₁-C₂₂-alkyl, C₃-C₈-cycloalkyl, substituted C₃-C₈-cycloalkyl, heteroaryl, and aryl [page 4, Paragraph [0006]]; and

each Q₁, Q₂ and Q₃ group independently is radical A, wherein radical A has the following structure [page 5, Paragraph [0006]]:

Radical A =



[page 5, Paragraph [0006]].

Independent Claim 28

Independent claim 28 relates to a polymer blend comprising a mixture of [page 3, Paragraph [0005]]:

(A) at least one polyester having an inherent viscosity of about 0.4 to 1.2 dL/g measured at 25°C in a 60/40 ratio by weight of phenol/tetrachloroethane [page 14, Paragraph [0015]] and comprises:

(1) diacid residues comprising at least about 50 mole percent of terephthalic acid residues, cyclohexanedicarboxylic acid residues or a mixture thereof [page 14, Paragraph [0015]]; and

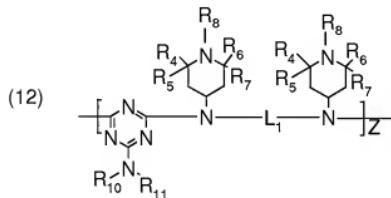
(2) diol residues comprising at least about 50 mole percent of ethylene glycol residues, cyclohexanedimethanol residues, or a mixture thereof [page 14, Paragraph [0015]]; and

wherein the total mole percentages of diacid residues is 100 mole percent and the total mole percentages of diol residues is 100 mole percent [page 14, Paragraph [0015]]; and

(B) about 0.1 to 0.5 weight percent of at least one phosphorus-containing compound selected from the group of bis(2,4-di-t-butylphenyl)pentaerythritol diphosphite [page 13, paragraph

[0013]], distearyl pentaerythritol diphosphite [page 13, paragraph [0013]], and bis-(2,4-dicumylphenyl) pentaerythritol diphosphite [page 13, paragraph [0013]], based on the total weight of the blend;

(C) about 0.1 to 1.0 weight percent of at least one hindered amine light stabilizer based on the total weight of the composition having the formula [page 10, Paragraph [0007] and page 48, claim 14(c) as filed]:



[page 6, structure 12]

wherein R₄=R₅=R₆=R₇=R₈=methyl, (R₁₀)(R₁₁)N- collectively represent morpholino, L₁ is C₁ to C₆ alkylene, and Z is 1 to 6 [page 14, Paragraph [0015]]; and

(D) at least one polycarbonate. [page 3, Paragraph [0005]].

ARGUMENTGround of Rejection 1

Claims 1, 3-33, and 68-71 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over a combination of 24 references. For purposes of this appeal, claim 1 is representative of the rejected group of claims.

The rejection should be reversed because it lacks one or more essential elements needed for a *prima facie* case of obviousness.

For rejections under 35 U.S.C. § 103(a), it is the Office's policy to follow *Graham v. John Deere Co.* and to perform the four factual inquiries enunciated in that decision. *MPEP* § 2141 at 2100-116 (Rev. 6, Sept. 2007). The four factual inquiries are:

- (a) determining the scope and content of the prior art;
- (b) ascertaining the differences between the prior art and the claims at issue;
- (c) resolving the level of ordinary skill in the pertinent art; and
- (d) evaluating evidence of secondary consideration.

Graham, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966).

The rejection in this case, however, falls short of complying with the law and the Office's policy. For example, the rejection fails to set forth the difference or differences between the cited references and the rejected claims. *MPEP* § 2141.02. And the rejection fails to evaluate the evidence of unexpected results discussed in Applicants' *Second Reply and Amendment* at 28-29 (Dec. 12, 2006). *MPEP* § 2145 at 2100-164 ("Evidence pertaining to secondary considerations must be taken into account whenever present....").

Suffice it to say, however, that none of the cited documents discloses or suggests the unexpected benefits that can be obtained by using the claimed combination of a phosphorus-containing compound and a HALS with a blend of a polycarbonate and a polyester prepared with a metal catalyst. In particular, none of the applied references discloses or suggests that the claimed combination can provide both good color and improved hydrolytic stability. Applicants' *Second Reply and Amendment* at 28-29 (Dec. 12, 2006)

As seen from Examples 1-6 of the present description, good color and improved hydrolytic stability of polycarbonate-polyester blends can be realized by a combination of a phosphite stabilizer and a HALS. In particular, Examples 1,2, and 6 show that blends containing the phosphite stabilizer (Example 2) exhibit significantly improved color (i.e., less yellowness) compared to blends without stabilizer (Example 1) or blends with the HALS (Example 6). Unfortunately, the use of the phosphite stabilizer has a detrimental effect on the hydrolytic stability of the blend, especially the polycarbonate component (Example 2). Examples 3-5 show that blends containing both the phosphite stabilizer and the HALS exhibit significantly improved hydrolytic stability compared to the blend containing only the phosphite stabilizer (Example 2), while maintaining color levels much lower than blends without stabilizer (Example 1) or blends with the HALS (Example 6). Thus, the subject matter of the present claims provides unexpected results over what was known in the art. Applicants' *Second Reply and Amendment* at 28-29 (Dec. 12, 2006)

In response to the above arguments, the Examiner stated that “[i]n the last three actions the examiner has pointed out what the cited references contain and where they contain the subject matter.” *Final Office Action* at 2 (July 3, 2007). However, the Examiner’s burden of establishing a *prima facie* case of obviousness requires more than that. It requires inquiry into all four of the factors enumerated above.

In this case, at best, the Examiner has embarked upon the first step of a multi-step process, and the Examiner is attempting to improperly shift the burden onto Appellants to do the rest. *See id.* (“Applicants have chosen not to point out what the deficiencies of the individual references are and what each reference lacks.”).

Because the Examiner has omitted one or more essential elements needed for a *prima facie* case of obviousness, and the rejection under 35 U.S.C. § 103(a) is improper and should be reversed.